



PATENT ABSTRACTS OF JAPAN

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(54) HEAT EXCHANGING PIPE

(57) Abstract:

PURPOSE: To prevent the growth of marine flora and fauna on the inner surface of pipe by forming the inner pipe with novel Cu-Zu-As alloy and Cu-Zn-Al-As alloy that satisfy the resistance against the attack by said flora and fauna, corrosion resistance and low cost so as to advantageously allowing the elusion of copper ion.

CONSTITUTION: The observation of the growth of marine flora and fauna and the condition of localized corrosion (Table 2) on marine life growth test plates (200mm wide x 300mm long x 1mm thick) made of various alloy composition (Table 1) which were suspended at a depth of 3m in the normal sea area and left there for one year revealed that the growth of barnacles on the copper alloy plates No.1W7 was very little, and the development of corrosion was negligible, except for No.1. In fact, by using the copper alloy welded pipe and welded titanium pipe (JIS-H4631, TTH35) made of the copper alloy material of No.1W7, heat exchanging pipes of dual pipe structure in which the inner pipe and

outer pipe water respectively made of said pipes which were tightly contacting with each other were manufactured and fitted to a heat exchanger using sea water as coolant, and the similar results to the Table 2 were obtained.

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表 1 表

合金組成 (wt%)					
No.	Cu	Zn	Al	As	その他
1	96.9	3.5	0.4	0.2	
2	92.1	6.2	0.8	0.9	
3	81.3	15.7	0.9	0.1	
4	82.3	1.2	10.4	0.1	
5	75.1	0	20.2	0.7	
6	75.5	0.5	20.4	0.6	
7	67.1	0.8	20.4	0.7	
8	55.3	0.7	20.2	0.8	
9	82.9	1.9	10.4	0.8	
10	51.2	0.4	20.4	0.8	
標準鋼	70	2.2	2.2	0.05	Fe

表 2 表

No.	ブリアイの付着	腐蝕部点の発生
1	無	有
2	無	有
3	無	有
4	少	有
5	無	有
6	少	有
7	少	有
8	無	有
9	多	有
10	少	有
標準鋼	多	有